

# DRILL BIT PIONEERS

Hard Metals is an Australian engineering company specialising in the designing and manufacturing tungsten carbide and polycrystalline diamond tools for the drilling industry. *Trenchless Australasia* speaks to its founder and Director Stephen Ainge ahead of a trip to Washington D.C. for the ISTT's International No-Dig and NASTT's No-Dig Show.

## WHEN DID YOU ESTABLISH HARD METALS AND HOW HAVE YOU SEEN IT GROW?

Hard Metals was founded in 1982. My father Ron Ainge had a vision to introduce tungsten carbide to the agricultural industry for protection of a new range of minimum tillage points developed for sustainable farming methods which were just starting to come into vogue at the time. There were challenges convincing the agricultural industry of the benefits of tungsten carbide. Based on successful trials at the Cowra Agricultural Research Centre and the University of South Australia, the concept was promoted through field days and the tungsten protected tillage tools gained traction in agriculture. We setup a manufacturing facility for brazing tungsten in the early 90s and provided the opportunity to investigate the manufacture of other tungsten carbide ground engaging tools and their application

A-B: Hard Metal's first HDD tool, the Wombat Hole Opener, at work.

in the construction industry. This exposed us to new markets, and a chance meeting with UEA in 2006 introduced Hard Metals to horizontal directional drilling (HDD) tools for trenchless methods.

## HOW DID THE MEETING WITH UEA SHAPE YOUR INTRODUCTION TO THE TRENCHLESS INDUSTRY?

UEA wanted an engineering shop to develop polycrystalline diamond composite (PDC) for drilling predominantly Sydney sandstone. After a few iterations, and

demands for improved performance and features, I designed the Wombat Hole Opener which can be upsized and fitted with new cutter segments onsite, without the need to go back to a specialist workshop.

The tool's application was very successful, but its design was also novel enough to justify patents in Australia and overseas, including the US. With market demand for bigger and better tooling, Hard Metals has developed manufacturing facilities that have the capabilities to manufacture hole openers up to 1 m in diameter.



## WHAT IS THE MOST MEMORABLE PROJECT YOU HAVE WORKED ON DURING YOUR CAREER?

Without a doubt the Wombat Hole Opener. It was based on a concept many considered would never work and went through a series of failures which forced us back to the drawing board on more than one occasion.

Stabilising the tool at the drill bit rock interface, without compromising integrity, was the biggest challenge. It wasn't until we succeeded in incorporating a field removable stabilising ring that we achieved this.

The current iteration is possibly the best performing PDC hole opener anywhere in the world. However, we are continuing to improve and develop it and have set up a special engineering department for this purpose.

## WHAT ARE SOME OF THE BIGGEST CHANGES YOU HAVE SEEN IN THE SECTOR OVER THE YEARS?

Some of the biggest changes we have been associated with is the improvement in capability of HDD methodology. We are now

seeing smaller machines drilling larger holes, more reliably, over distances and at depths that were previously considered impossible. Three basic factors have made this possible: better tools, mud systems, and guidance techniques. In the future, HDD will become the primary method for new installations.

## WHEN DID HARD METALS EXPAND INTERNATIONALLY?

Hard Metals started exhibiting overseas in 2010, and while we took a few orders over the ensuing years, it wasn't until we established Hard Metals Canada in Calgary in 2015, to service the Alberta pipeline industry, that things started to really take off.

While it is still early days, we have enjoyed good success in Canada and eventually we expect similar demand in the US.

## WHAT PRODUCTS WILL BE ON DISPLAY AT THE INTERNATIONAL NO-DIG IN WASHINGTON D.C.?

At the ISTT International No-Dig and NASTT No-Dig Show in Washington D.C. we will be exhibiting the latest in our

PDC tooling range, including the Wombat Hole Opener. Any HDD operator would be interested in this range because we have extended our designs to cover most scenarios and most machines, from small to large sized rigs. We will also release a new cutter to cover off on ground conditions not normally suited to PDC – this one is a show surprise, so stay tuned! T

## WOMBAT HOLE OPENER

Designed and manufactured by Hard Metals, the Wombat Hole Opener is suited to horizontal, vertical and inclined applications, and marks a significant step forward in the art of reaming.

Featuring inbuilt stabilisation, the flexibility of simple replacement of cutter type and diameter in the field, combined with excellent down the hole performance, makes it a worthy addition to any drillers' tool box.

For more information visit [www.hardmetals.com](http://www.hardmetals.com)



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